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ABSTRACT

The National Longitudinal Study of the High School Class of 1972 obtained data for 23,451 students, of whom 16,683 completed the base-year questionnaire; 21,350 completed the first follow-up; and 20,872 completed the second follow-up. This report describes the methodology for minimizing bias in the data which might be caused by nonresponse to such a large survey. A weighting class method was selected that involved partitioning the entire sample into classes of presumably homogeneous students. This report describes the second follow-up weight calculations, nonresponse adjustment methodology, classifier variable data, procedure for forming weighting classes, and the adjusted student weight calculations. The appended tables show the nonresponse adjustment factors for each weighting class as well as the total number of students, total number of responding students, the sum of all unadjusted weights, and the sum of the respondent unadjusted weights for each weighting class. (Author/CTM)

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CALCULATION OF NONRESPONSE-ADJUSTED STUDENT WEIGHTS FOR RESPONDENTS TO THE NLS SECOND FOLLOW-UP SURVEY

by

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A. Introduction

A description of the NLS design and computation of the adjusted weights for the Base Year and First Follow-Up Surveys of the NLS is described in detail in a report by Paul Moore.[1/]

In this report, the availability of unadjusted weights is assumed. The procedure for nonresponse adjustment is similar to that used by Moore except for minor changes as follows:

(i) Additional information was available for some individuals on some of the classifiers from Second Follow-Up questionnaire (SFU) and Activity State Questionnaire (ASQ) responses. This data were utilized to define classifiers for additional students whenever possible in determining weight classes.

(ii) Instead of adding individuals of "unknown" category to the modal category, they were proportionately and randomly allocated to the known categories. The proportions for each category were determined from the unadjusted total weights for the known categories.

The complete procedure incorporating the above changes is briefly described below. There were 23,451 sample students, of whom 16,683 completed a Base-Year Student Questionnaire, 21,350 completed a First Follow-Up Questionnaire, and 20,872 completed a Second Follow-Up Questionnaire.

B. Nonresponse Adjustment Methodology

Handling the problem on nonresponse when analyzing survey data is an open question. In general, the mean values of most variables will be different for respondents and nonrespondents. If the differences are large or if the survey response rates are low, then appropriate nonresponse adjustments or data imputations should be used in attempting to reduce the bias due to nonresponse. There are no methods of adjusting for nonresponse that are known to be unbiased or even consistent.[2/] Various methods of imputing or attempting to correct for

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[1/] Moore, R. Paul. Calculation on Nonresponse-Adjusted Student Weights for Respondents to the NLS Base Year and First Follow-Up Surveys, Statistics Research Division, Research Triangle Institute, October, 1975.

[2/] U. S. Bureau of the Census, The Current Population Survey - A Report on Methodology, Technical Paper No. 7, U. S. Government Printing Office, Washington, D. C., 1963.

both item nonresponse and for total questionnaire response are summarized in a paper by Chapman.[3/]

After considering various methods of adjusting for questionnaire nonresponse, a weighting class method was selected. This method involved partitioning the entire sample of NLS respondents and nonrespondents into weighting classes, which are (hopefully) homogeneous groups of students with respect to the survey variables. Differential response rates for students in different weighting classes are reflected in the adjustment. In order for the weighting class adjustment procedure to be most effective, the classifier variable values used to construct classes must be available for a very large proportion of respondents and nonrespondents alike.

Once the weighting classes have been defined, the weight adjustment procedure involves simply calculating each sample student's adjusted weight as

$$W_{hij(k)} = W_{uhij} \, L_{hij} \, \frac{\sum_{hij} K_{hij} \, W_{uhij}}{\sum_{hij} K_{hij} \, L_{hij} \, W_{uhij}}$$

$$K_{hij} = \begin{cases} 1 \text{ if student-hij was assigned to weighting class-k, or} \\ 0 \text{ otherwise,} \end{cases}$$

$$L_{hij} = \begin{cases} 1 \text{ if student-hij completed the survey instrument, or} \\ 0 \text{ otherwise, and} \end{cases}$$

$W_{uhij(k)}$ = the unadjusted student weight for student-j belonging to the weight class (k) of stratum-h as described in section III.A.

Thus, the unadjusted weights for all respondent students in a weighting class are simply multiplied by the ratio of the sum of weights for the weighting class for both respondents and nonrespondents to the sum of the respondents' weights for the weighting class. The adjusted weights for all nonrespondents

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[3/] David W. Chapman, A Survey of Nonresponse Imputation Procedures, presented at the Southern Region Education Board Summer Research Conference on Statistics in Mountain Lake, Va., June 11-15, 1973.

are set equal to zero. Five different sets of adjusted student weights were calculated; each set is appropriate for analyses involving a particular subset of the Second Follow-Up data file.

C. Assembling Classifier Variable Data

Five classifier variables ere chosen for use in defining weighting classes. The variables selected were those that were expected to be most effective, of the variables available, in defining weighting classes that varied with respect to response rates and other survey variables where parameters are to be estimated.

The classifier variables used to define weighting classes were:

Race--white or nonwhite;

Sex--male or female;

High school curriculum--general, academic or vocational-technical;

High school grades--B or better, or C or below;

Father's education--less than high school graduate, high school graduate, some beyond high school, or college graduate. Mother's education was used if father's was not available.

Since there were two or more sources for each of the classifier variables, the following source priorities were used:

Race

1. Base-Year Student Questionnaire (Q 84)
2. First Follow-Up Form B (Q 95)
3. Second Follow-Up Questionnaire (Q 28)

Sex

1. Base-Year Student Questionnaire (page 1)
2. First Follow-Up Questionnaire
3. Inferred from name on student rosters
4. Second Follow-Up Questionnaire (inside back cover)

High School Curriculum

1. Base-Year Student Questionnaire (Q 2)
2. First Follow-Up Questionnaire Form B (Q 86)
3. Activity State Questionnaire (Q 13)
4. SRIF (Q 7)

High School Grades

1. SRIF (Q 1)
2. Base-Year Student Questionnaire (Q 5)
3. First Follow-Up Questionnaire (Q 87)

Parents' Education

1. Base-Year Student Questionnaire (Q 90A)
2. First Follow-Up Questionnaire (Q 78A)
3. Activity State Questionnaire (Q 14A)
4. Base-Year Student Questionnaire (Q 90B)
5. First Follow-Up Questionnaire (Q 78B)
6. Activity State Questionnaire (Q 14B)

For example, in determining the value of the third classifier variable for a student, question 7 of the SRIF was assigned the first priority. If the stu- did not complete an SRIF or left question 7 blank, then the information would be obtained from question 2 of the Base-Year Questionnaire, if available there, or from question 86 of the First Follow-Up questionnaire, or finally from question 13 of the Activity State Questionnaire. Note that the fifth classifier variable, parents' education, is defined as father's education if available, or mother's education, otherwise, and Activity State Questionnaire data was utilized, only if no other data were available.

Table 1 shows the number of students for whom a value was ascertained for each of the five classifier variables. The parents' education variable had the highest number of missing values, followed by race, grades, curriculum, and sex. Values of all five classifier variables were determined for over 92 per cent of the 23,451 sample students and at least three of the classifier variable values were determined for 98.5 percent of the sample students (Table 2). Because of the missing classifier data, an "unavailable" category had to be included for each of the five classifier variables. It is not likely that the number of missing values may be reduced substantially in the future, since the number of missing classifiers among SFU respondents is small as seen in the last column of Table 1.

D. Forming the Weighting Classes

The next step was to cross-classify the 23,451 sample students by the values of the five classifier variables. Since an "unavailable" category had been added to each classifier variable, a total of 540 cells (3 x 3 x 4 x 3 x 5) was produced, with counts of sample students and responding students for each cell. (Several respondent counts were made since several different adjusted weights were to be calculated--see next section).

An arbitrary rule that each weighting class must contain at least twenty respondents was used to avoid any very large weight adjustments. A set of collapsing rules had been predetermined for use in combining "similar" cells which

Table 1. Availability of Classifier Variable Values, by Variable

Variable	FFU Value Missing	SFU Value Missing	Value Determined	Percent Determined	Classifier Missing Among SFU Respondents
Race	2,606	1,086	22,365	95.4	20
Sex	196	96	23,355	99.6	2
High school curriculum	2,376	206	23,245	99.1	22
High school grades	613	613	23,390	99.7	289
Parents' education	1,966	1,370	22,081	94.2	252

Table 2. Availability of Classifier Variable Values, by Number of Variables Determined

Number of Variables Determined	FFU # of of Students	SFU # of of Students	Percent of Sample Students
5	19,783	21,717	92.7
4	1,210	685	2.9
3	1,281	681	2.9
2	819	189	0.8
1	289	138	0.5
0	69	41	0.2
Total	23,451	23,451	100.0

Table 3. Marginal Proportions of Unadjusted Weights for Known Categories

Classifier	Category	Number of Individuals	Total Unadjusted Weight	Proportion (Excluding Unknown)
Race				
	White	17,160	2,399,936.92	.821
	Non-White	5,205	520,969.91	.178
	Unknown	1,086	122,964.93	
Sex				
	Male	11,678	1,520,494.90	.501
	Female	11,677	1,513,758.67	.498
	Unknown	96	9,345.19	
High School Curriculum				
	General	8,481	1,049,522.51	.347
	Academic	9,095	1,237,655.26	.410
	Vocational-Technical	5,669	729,620.04	.241
	Unknown	206	26 800.95	
High School Grades				
	B or Better	10,046	1,297,704.68	.437
	C or Below	12,792	1,671,075.06	.562
	Unknown	613	74,819.02	
Parents' Education				
	Less Than High School Graudate	7,963	960,109.27	.331
	High School Graduate	6,612	883,872.88	.305
	Some Beyond High School	3,869	534,933.47	.184
	College Graduate	1,370	151,416.60	.177
	Unknown			

Table 4. Appropriate Weights for Various Data Sets and Variables

Weight Set	Appropriate Data Set	Appropriate Variables
W8	Respondents to Second Follow-Up Questionnaire	Variables defined from Second Follow-Up Questionnaire items
W9	Respondents to the Base-Year Questionnaire and the Second-Follow-Up Questionnaire	Change variables defined from Base-Year Student Questionnaire, and Second Follow-Up Questionnaire
W10	Respondents to the First Follow-Up Questionnaire, and Second Follow-Up Questionnaire	Change variables defined from First Follow-Up Questionnaire and Second Follow-Up Questionnaire
W11	Respondents to all three questionnaires	Change variables defined using items from all three questionnaires
W12	Respondents to either of the three questionnaires	Variables with values defined from data available for each student in the release file

Table 5. Response Groups Defined by Base-Year, First Follow-Up and Second Follow-Up Responses

Response Group	Completed Questionnaires Received for			Number of Students
	Base Year	First Follow-Up	Second Follow-Up	
I	Yes	Yes	No	735
II	Yes	No	No	504
III	No	Yes	No	421
IV	No	No	No	919
V	Yes	Yes	Yes	14,900
VI	No	Yes	Yes	5,294
VII	Yes	No	Yes	544
VIII	No	No	Yes	134

contained fewer than 20 respondents. Cells were combined in the following order until each of the combined cells contained at least 20 respondents:

1. Add "unavailables" randomly to known category of each variables in proportion to marginal weight totals for each known category (see Table 3).
2. Change curriculum to two levels
   a. Add "general" to "vocational-technical"
3. Change father's education to two levels
   a. Add "less than H. S." to "H.S. graduate"
   b. Add "some beyond H. S." to "H. S. graduate" — college graduate !?
4. Eliminate grades
5. Eliminate curriculum
6. Eliminate father's education
7. Eliminate sex
8. Eliminate race

It turned out that virtually all of the cells involving one or more "unavailable" classifier variables had fewer than 20 responding students--because of this, the combinations specified in step 1 above were done for all of those cells. Step 2 was used seven times and step 3 was used two times. The remaining steps, 4 through 8, were never used.

A total of 87 weighting classes were formed using the procedures described in this section. Each weighting class contained 20 or more respondents for each of the data sets described in the next section.

E. Calculating Adjusted Student Weights

Once the weighting classes had been determined, the adjusted student weights were computed using the equation given in section B above. Since several different data sets could be derived from the NLS Base-Year, First Follow-Up and Second Follow-Up data base, a total of five different sets of adjusted weights were computed.

Table 4 lists the data set and variables appropriate to each set of weights--W8, W9, W10, W11, and W12. Table 5 shows the number of sample students in each of five response groups, determined by which questionnaires the students completed.

There was a total of 21,350 respondents to the First Follow-Up questionnaire, and 20,872 respondents (see Table 5) to the Second Follow-Up question-

naire. The weight W8 is appropriate for analysis of items in the Second Follow-Up Questionnaire.

Analyses of change, or transition variables derived using both Base-Year and Second Follow-Up items should be carried out using the W9 weights. For analyses of change variables based on Second Follow-Up items in conjunction with First Follow-Up items, the W10 weights should be used. The weights W11 should be used for combined analysis of items across all three questionnaires.

The last set of weights W12 is appropriate for analyses involving every student who completed a Base-Year Student Questionnaire, and/or a First Follow-Up Questionnaire and/or a Second Follow-Up Questionnaire.

For each weight set, the adjusted weights for nonrespondents are zero and the sum of the respondents' adjusted weights equals the sum of the unadjusted weights for the entire sample. The user should choose the set of adjusted weights which is appropriate to the data set and variables to be analyzed. The weights are adjusted only for questionnaire nonresponse and not for item nonresponse. The same methods could be used to obtain another set of weights, adjusted for both questionnaire nonresponse and item nonresponse, for any questionnaire item or variable. In most cases, the gains from such an adjustment would not be expected to outweigh the additional cost.

Tables 6 through 10 show the nonresponse adjustment factors, for each weighting class, for each of the five sets of adjusted student weights. The tables also show the total number of students, total number of responding students, sum of all unadjusted weights, and sum of the respondent unadjusted weights. Only eight of the adjustment factors were greater than 2.0. The largest adjustment factor used for any of the weighting classes was 2.62 for the weight class 67 for weight set W11, where the response rate was the lowest.

A	B	C	D	E	F	G
1	259	228	3024766	2693115	1.12315	3024766
2	438	407	5267484	4976945	1.05837	5267484
3	241	215	2977872	2665661	1.11712	2977872
4	452	402	5519066	5081537	1.08618	5519066
5	140	124	1783503	1755588	1.12983	1783503
6	228	205	2966705	2769504	1.07120	2966705
7	179	152	2382635	2072049	1.14969	2382635
8	229	214	2985098	2798137	1.06682	2985098
9	940	778	12398585	10419986	1.18988	12398585
10	657	566	8164036	7086652	1.15219	8164036
11	901	755	12132206	10310759	1.17666	12132206
12	549	474	7798742	6774588	1.15118	7798742
13	442	383	6077443	5382798	1.13730	6077443
14	279	240	3853195	3383105	1.13895	3853195
15	322	266	4590775	3849714	1.19560	4590775
16	217	184	3103326	2649777	1.17116	3103326
17	125	110	1120903	994708	1.12682	1120903
18	223	211	2007585	1879853	1.06795	2007585
19	61	53	505282	452235	1.11730	505282
20	78	67	694468	634909	1.09381	694468
21	61	53	637662	575353	1.10830	637662
22	103	82	1014993	772798	1.31340	1014993
23	488	422	4694302	4024911	1.16651	4694302
24	411	376	4161023	3793891	1.09677	4161023
25	205	162	1978802	1609028	1.22981	1978802
26	173	148	1882818	1599052	1.17746	1882818
27	96	78	1036161	793749	1.30540	1036161
28	65	56	737933	593417	1.24354	737933
29	75	58	785290	633379	1.24574	785290
30	68	47	810046	534627	1.51516	810046
31	404	370	5269275	4882145	1.07930	5269275
32	483	450	6707313	6315716	1.06200	6707313
33	619	578	8449245	7990038	1.05747	8449245
34	706	658	10003877	9401659	1.06405	10003877
35	484	460	6960101	6646546	1.04718	6960101
36	608	580	8777583	8357483	1.05031	8777583
37	750	709	10480140	9920829	1.05638	10480140
38	780	736	11296379	10714949	1.05026	11296379
39	362	319	5186839	4652026	1.11496	5186839
40	179	154	2464880	2139876	1.15188	2464880
41	586	522	8777013	8005176	1.09642	8777013
42	280	252	4218357	3832206	1.10076	4218357
43	397	351	5895235	5243923	1.12420	5895235
44	216	197	3294868	3019698	1.09113	3294868
45	450	405	6783126	6145467	1.10376	6783126
46	250	235	3712147	3516055	1.05553	3712147
47	143	131	1362392	1267035	1.07526	1362392
48	212	204	2005945	1917116	1.04633	2005945
49	101	85	956230	792228	1.20701	956230
50	141	127	1453432	1296423	1.12111	1453432
51	56	51	593486	517613	1.14658	593486
52	95	87	999753	927396	1.07802	999753
53	58	53	698664	651709	1.07205	698664
54	74	65	775610	669295	1.15885	775610
55	180	157	1882748	1648658	1.14199	1882748
56	163	150	1513403	1373648	1.10174	1513403
57	132	118	1364487	1245506	1.09575	1364487
58	84	75	807336	718163	1.12417	807336
59	61	50	663781	494747	1.34166	663781
60	60	57	670125	631980	1.06036	670125
61	36	29	481233	379387	1.26845	481233
62	31	27	356944	304571	1.17196	356944
63	178	159	2401187	2155882	1.11378	2401187
64	428	393	5623753	5105734	1.10144	5623753
65	130	112	1850277	1633380	1.13279	1850277
66	362	331	5210109	4857051	1.07269	5210109
67	61	46	897882	633343	1.41769	897882
68	173	154	2352511	2110338	1.11476	2352511
69	71	65	1009221	936732	1.07738	1009221
70	578	481	7645811	6386526	1.19718	7645811
71	557	535	8275357	7338974	1.12759	8275357
72	449	386	6506953	5677739	1.14605	6506953
73	393	346	5584365	4942579	1.12985	5584365
74	187	165	2763880	2510378	1.10099	2763880
75	221	194	3268358	2881948	1.13408	3268358
76	119	85	1623305	1227528	1.32242	1623305
77	108	86	1550122	1308232	1.18490	1550122
78	77	73	647835	618261	1.04783	647835
79	202	185	1956363	1795266	1.08973	1956363
80	42	36	400246	342097	1.16998	400246
81	86	74	796789	724978	1.09905	796789
82	332	298	3321622	2929316	1.13392	3321622
83	360	349	3905000	3592354	1.08703	3905000
84	152	130	1523618	1314525	1.15906	1523618
85	147	128	1614139	1330921	1.21280	1614139
86	72	59	793288	656972	1.20749	793288
87	62	50	658731	526992	1.24998	658731
TOTAL	23451	20872	304359876	272618307		304359876

Table 6. Nonresponse Adjustment for Weight Set W8

Key to Column Headings:

A. Weighting Class

B. Total Number of Students

C. Number of Respondents

D. Sum of Unadjusted Weights for All Students

E. Sum of Unadjusted Weights for Respondents

F. Adjustment Factor

G. Sum of Adjusted Weights

A	B	C	D	E	F	G
1	259	157	3020766	1766272	1.71241	3020766
2	438	252	5287484	3092890	1.70956	5287484
3	241	142	2977872	1748272	1.70352	2977872
4	432	295	5519066	3784206	1.45845	5519066
5	140	86	1983565	1209936	1.63869	1983565
6	224	144	2966705	1989066	1.49151	2966705
7	179	104	2382635	1397365	1.70509	2382635
8	229	152	2985098	2070116	1.44203	2985098
9	940	533	12398305	7088822	1.75014	12398305
10	657	388	8164436	5039777	1.62008	8164436
11	901	562	12132206	7833337	1.54877	12132206
12	549	331	7798782	4739968	1.64552	7798782
13	442	284	6077483	4021375	1.48543	6077483
14	279	165	3853195	2397738	1.60701	3853195
15	322	196	4590775	2918107	1.57328	4590775
16	217	141	3103326	2114356	1.46774	3103326
17	125	75	1120903	709781	1.57923	1120903
18	223	138	2007585	1247059	1.60934	2007585
19	61	25	505282	225059	2.24511	505282
20	79	40	694468	383908	1.80896	694468
21	61	38	637662	465247	1.37059	637662
22	103	56	1014993	535208	1.89616	1014993
23	484	282	4694362	2798509	1.67743	4694362
24	411	240	4161023	2405106	1.73008	4161023
25	205	108	1976802	1153476	1.71551	1976802
26	173	100	1882818	1167771	1.61232	1882818
27	96	60	1036161	665147	1.55779	1036161
28	65	44	737933	441600	1.67104	737933
29	75	47	785290	530833	1.47935	785290
30	68	35	810046	401816	2.01596	810046
31	404	272	5269275	3620044	1.45542	5269275
32	483	352	6707313	4972763	1.34881	6707313
33	619	453	8449205	6333345	1.33409	8449205
34	706	526	10003877	7604924	1.31545	10003877
35	484	348	6960101	5101552	1.36432	6960101
36	608	433	8777963	6369756	1.37807	8777963
37	750	531	10480140	7701384	1.36081	10480140
38	780	577	11296379	8535886	1.32385	11296379
39	362	241	5186839	3488253	1.49551	5186839
40	179	114	2464880	1653835	1.49040	2464880
41	586	420	8777013	6472842	1.35598	8777013
42	280	195	4218357	3034633	1.39007	4218357
43	397	270	5895235	4139856	1.42402	5895235
44	216	156	3290868	2424619	1.35692	3290868
45	450	317	6783126	5081388	1.33490	6783126
46	258	160	3712147	2714411	1.36757	3712147
47	143	88	1362392	899758	1.51418	1362392
48	212	145	2005985	1273183	1.57554	2005985
49	101	60	956230	565128	1.69206	956230
50	141	85	1453432	804258	1.80717	1453432
51	56	37	593486	409186	1.45043	593486
52	95	60	999753	684704	1.46012	999753
53	58	33	698664	411812	1.69656	698664
54	74	48	775610	537442	1.44281	775610
55	180	132	1882748	1313877	1.43297	1882748
56	163	116	1513483	1080982	1.40003	1513483
57	132	83	1368487	920155	1.48728	1368487
58	84	58	807336	553256	1.45924	807336
59	61	40	663781	421312	1.57551	663781
60	60	42	670125	424846	1.57736	670125
61	36	23	481233	324335	1.48375	481233
62	31	23	356904	265774	1.34304	356904
63	178	94	2401187	1199922	2.00112	2401187
64	428	297	5623753	3906178	1.43971	5623753
65	131	82	1850277	1121607	1.64967	1850277
66	362	265	5210109	3755918	1.38792	5210109
67	61	26	897882	342935	2.61823	897882
68	173	118	2352511	1637855	1.43634	2352511
69	71	45	1009221	707859	1.42735	1009221
70	578	385	7645811	5187714	1.47367	7645811
71	587	411	8275357	5624806	1.47123	8275357
72	449	300	6506953	4247332	1.53201	6506953
73	393	267	5584365	3899689	1.43209	5584365
74	187	130	2763880	1932414	1.43027	2763880
75	221	151	3268358	2297923	1.42231	3268358
76	119	72	1623305	991742	1.63682	1623305
77	108	71	1550122	1139925	1.35996	1550122
78	77	52	647835	477020	1.44923	647835
79	202	129	1956363	1175247	1.66464	1956363
80	42	25	400246	232852	1.71889	400246
81	86	60	796789	563993	1.41277	796789
82	332	229	3321622	2299693	1.44458	3321622
83	380	268	3905000	2744653	1.42277	3905000
84	152	99	1523618	1065500	1.42995	1523618
85	147	102	1618139	1116198	1.44610	1618139
86	72	51	793288	587027	1.35145	793288
87	62	41	658731	445326	1.47921	658731
TOTAL	23451	15448	304359876	205230675		304359876

Table 7. Nonresponse Adjustments for Weight Set W9

Key to Column Headings:

A. Weighting Class

B. Total Number of Students

C. Number of Respondents

D. Sum of Unadjusted Weights for All Students

E. Sum of Unadjusted Weights for Respondents

F. Adjustment Factor

G. Sum of Adjusted Weights

A	B	C	D	E	F	G
1	259	215	3029766	2493315	1.21515	3029766
2	438	402	5287484	4917913	1.07515	5287484
3	241	206	2977872	2593729	1.14810	2977872
4	432	390	5519066	4959061	1.11283	5519066
5	140	119	1983505	1703239	1.16435	1983505
6	229	200	2966705	2726872	1.08795	2966705
7	179	149	2382635	2048725	1.16298	2382635
8	229	211	2985098	2766881	1.07887	2985098
9	940	741	12398305	9983257	1.24691	12398305
10	657	550	8164436	6924629	1.17908	8164436
11	901	723	12132266	9902566	1.22623	12132266
12	549	459	7798742	6633708	1.17562	7798742
13	842	367	6077443	5121205	1.18672	6077443
14	279	232	3853195	3270513	1.17816	3853195
15	322	258	4590775	3693631	1.24289	4590775
16	217	176	3103326	2545341	1.21922	3103326
17	125	105	1120903	958578	1.16938	1120903
18	223	208	2007585	1831146	1.09635	2007585
19	61	47	505282	416457	1.21329	505282
20	78	66	698468	629018	1.10405	698468
21	61	49	637662	535594	1.19057	637662
22	103	79	1014993	743118	1.36585	1014993
23	484	405	4698302	3905449	1.20199	4698302
24	411	371	4161023	3746299	1.11070	4161023
25	205	154	1978802	1527205	1.29570	1978802
26	173	144	1882818	1577923	1.19323	1882818
27	96	64	1036161	709373	1.46067	1036161
28	65	53	737933	573368	1.28701	737933
29	75	48	785290	552451	1.42147	785290
30	68	40	810046	475015	1.70531	810046
31	804	360	5269275	4773788	1.10380	5269275
32	403	341	6707313	6243298	1.07432	6707313
33	619	557	8449245	7750628	1.09022	8449245
34	706	647	10003877	9285096	1.07741	10003877
35	484	451	6960101	6552605	1.06219	6960101
36	608	569	8777963	8262002	1.06245	8777963
37	750	691	10480140	9721329	1.07806	10480140
38	788	730	11294379	10610469	1.06464	11294379
39	362	305	5186839	4496029	1.15365	5186839
40	179	148	2464880	2088332	1.18031	2464880
41	586	503	8777013	7774117	1.12900	8777013
42	280	243	4218357	3730165	1.13088	4218357
43	397	338	5895235	5010212	1.17664	5895235
44	214	193	3294868	2963756	1.11173	3294868
45	456	395	6783126	6006220	1.12935	6783126
46	250	232	3712147	3476703	1.06772	3712147
47	143	125	1362392	1218353	1.11822	1362392
48	212	200	2005945	1896020	1.05798	2005945
49	101	80	956230	763976	1.25165	956230
50	141	122	1453432	1268778	1.14558	1453432
51	56	48	593486	560238	1.18643	593486
52	95	86	999753	901129	1.10944	999753
53	58	53	698664	651709	1.07205	698664
54	74	61	775610	639631	1.21259	775610
55	184	151	1882748	1593237	1.18171	1882748
56	163	142	1513403	1317138	1.14902	1513403
57	132	109	1368487	1176179	1.16350	1368487
58	88	72	807336	700976	1.15173	807336
59	61	45	663781	465027	1.42740	663781
60	60	54	670125	606291	1.10529	670125
61	36	27	481233	336587	1.42974	481233
62	31	25	356944	296436	1.20414	356944
63	178	156	2401187	2135756	1.12428	2401187
64	428	390	5623753	5059254	1.11158	5623753
65	130	109	1850277	1607714	1.15087	1850277
66	362	325	5210109	4795957	1.08635	5210109
67	61	46	897882	633343	1.41769	897882
68	173	149	2352511	2076198	1.13309	2352511
69	71	65	1009221	936732	1.07738	1009221
70	578	456	7645811	6106281	1.25212	7645811
71	587	522	8275357	7207411	1.14817	8275357
72	449	370	6506953	5505608	1.18188	6506953
73	393	336	5580365	4823870	1.15705	5580365
74	187	160	2763880	2427172	1.13872	2763880
75	221	185	3268358	2805403	1.16519	3268358
76	119	80	1623305	1176132	1.38021	1623305
77	108	84	1550122	1277392	1.21351	1550122
78	77	73	647835	618281	1.04783	647835
79	202	175	1956363	1710446	1.14377	1956363
80	42	33	400246	310746	1.28802	400246
81	86	73	796789	708448	1.12406	796789
82	332	278	3321622	2783664	1.19351	3321622
83	380	346	3905000	3572485	1.09302	3905000
84	152	128	1523618	1300613	1.17146	1523618
85	147	125	1614139	1288587	1.25254	1614139
86	72	53	793288	609298	1.30199	793288
87	62	49	658731	522733	1.26017	658731
TOTAL	23851	20198	304359876	265520473		304359876

Table 8. Nonresponse Adjustments for Weight Set W10

Key to Column Headings:

A. Weighting Class

B. Total Number of Students

C. Number of Respondents

D. Sum of Unadjusted Weights for All Students

E. Sum of Unadjusted Weights for Respondents

F. Adjustment Factor

G. Sum of Adjusted Weights

Table 9. Nonresponse Adjustments for Weight Set W11

Key to Column Headings:

A. Weighting Class

B. Total Number of Students

C. Number of Respondents

D. Sum of Unadjusted Weights for All Students

E. Sum of Unadjusted Weights for Respondents

F. Adjustment Factor

G. Sum of Adjusted Weights

A	B	C	D	E	F	G
1	259	145	3824786	1638821	1.85736	3044776
2	458	249	5267488	3046520	1.73559	5287488
3	281	156	2077872	1705929	1.78560	2977872
4	532	285	5519066	3671531	1.50321	5519066
5	140	82	1983505	1203304	1.64838	1983505
6	224	139	2966785	1946032	1.52418	2966785
7	179	101	2382635	1374441	1.73333	2382635
8	229	149	2985098	2038806	1.46410	2985098
9	940	505	12398305	6739108	1.83975	12398305
10	657	373	8164436	4894719	1.65801	8164436
11	901	533	12132206	7488542	1.62010	12132206
12	549	319	7798742	4626256	1.68576	7798742
13	442	270	6077403	3891414	1.56176	6077403
14	279	157	3853195	2285146	1.68619	3853195
15	322	188	4594775	2812826	1.63309	4594775
16	217	135	3103326	2034725	1.52518	3103326
17	125	72	1120903	680538	1.64708	1120903
18	223	133	2007585	1213780	1.65399	2007585
19	61	22	505282	207709	2.43264	505282
20	74	39	698468	378013	1.83715	698468
21	61	34	637662	425488	1.49866	637662
22	103	56	1014993	535288	1.89616	1014993
23	464	268	4695302	2705695	1.73497	4695302
24	411	235	4161023	2357510	1.76500	4161023
25	205	102	1978802	1086723	1.82089	1978802
26	173	98	1882818	1158885	1.62468	1882818
27	96	51	1036161	588285	1.76132	1036161
28	65	41	737933	421556	1.75058	737933
29	75	39	785290	462731	1.69708	785290
30	68	32	810046	383746	2.11089	810046
31	404	263	5269275	3515953	1.49868	5269275
32	483	345	6707313	4921471	1.36298	6707313
33	619	434	8049285	6119421	1.38873	8049285
34	706	517	10003877	7519928	1.33191	10003877
35	480	337	6960101	5028606	1.38410	6960101
36	608	423	8777963	6278926	1.39800	8777963
37	750	513	10480140	7501880	1.39700	10480140
38	784	571	11296379	8441406	1.33821	11296379
39	362	232	5186839	3364606	1.54186	5186839
40	179	110	2464880	1610035	1.53095	2464880
41	586	406	8777013	6286542	1.39616	8777013
42	280	167	4218357	2941192	1.43423	4218357
43	397	258	5895235	3920615	1.50365	5895235
44	215	153	3290848	2391773	1.37658	3290848
45	450	309	6783126	4964973	1.36620	6783126
46	250	178	3712187	2692109	1.37890	3712187
47	143	83	1362392	860628	1.58302	1362392
48	212	141	2005905	1252087	1.60208	2005905
49	101	58	956230	552126	1.73192	956230
50	141	82	1453432	789009	1.84200	1453432
51	56	36	593486	401736	1.47730	593486
52	95	60	999753	684704	1.46012	999753
53	58	33	698864	411812	1.69656	698864
54	74	46	775610	517822	1.49783	775610
55	180	126	1882708	1258456	1.49608	1882708
56	163	111	1513403	1037946	1.45807	1513403
57	132	76	1368487	871229	1.57075	1368487
58	84	57	807336	548505	1.47158	807336
59	61	35	663781	391592	1.69508	663781
60	60	40	670125	403410	1.66115	670125
61	36	21	481233	281535	1.70932	481233
62	31	22	356944	260852	1.36838	356944
63	178	93	2401187	1194073	2.01092	2401187
64	428	295	5623753	3879788	1.44950	5623753
65	130	80	1850277	1100078	1.68195	1850277
66	362	259	5210109	3692816	1.41088	5210109
67	61	26	897882	342935	2.61823	897882
68	173	110	2352511	1610787	1.46047	2352511
69	71	45	1009221	707059	1.42735	1009221
70	578	363	7645811	4937117	1.54864	7645811
71	587	399	8275357	5504886	1.50328	8275357
72	449	287	6506953	4111927	1.58246	6506953
73	393	259	5584365	3796815	1.47080	5584365
74	187	126	2763880	1858882	1.48685	2763880
75	221	147	3268358	2244548	1.45614	3268358
76	119	70	1623305	978589	1.65886	1623305
77	108	69	1550122	1108985	1.39778	1550122
78	77	52	647835	447028	1.44923	647835
79	202	121	1956363	1124459	1.73952	1956363
80	42	22	400246	201501	1.98652	400246
81	86	58	796789	555376	1.43458	796789
82	332	213	3321622	2153034	1.54248	3321622
83	380	268	3905000	2748652	1.42077	3905000
84	152	97	1523618	1051592	1.44887	1523618
85	147	99	1614139	1073864	1.50311	1614139
86	72	47	793288	551209	1.43918	793288
87	62	41	658731	445726	1.47821	658731
TOTAL	23051	14900	304359876	199424541		304359876

A	B	C	D	E	F	G
1	259	246	3828786	2891949	1.04527	3824786
2	434	422	5287484	5156558	1.02557	5287484
3	241	228	2977872	2853580	1.04356	2977872
4	432	422	5519066	5402282	1.02162	5519066
5	140	132	1983505	1841173	1.07731	1983505
6	224	216	2966705	2871190	1.03354	2966705
7	179	159	2382635	2164053	1.10101	2382635
8	229	225	2985098	2959995	1.00848	2985098
9	940	879	12398305	11721901	1.05770	12398305
10	657	619	8164436	7777079	1.04981	8164436
11	901	837	12132206	11405743	1.06369	12132206
12	549	522	7798742	7412585	1.05209	7798742
13	442	415	6077443	5801329	1.04759	6077443
14	279	265	3853195	3694883	1.04285	3853195
15	322	306	4596775	4404520	1.04229	4596775
16	217	203	3103326	2913241	1.06525	3103326
17	125	122	1120903	1102468	1.01672	1120903
18	223	220	2007585	1968338	1.01994	2007585
19	61	58	505282	487641	1.03618	505282
20	70	72	694468	664598	1.04495	694468
21	61	58	637662	614117	1.03834	637662
22	103	93	1010993	908507	1.11721	1010993
23	480	473	4694302	4594063	1.02182	4694302
24	411	405	4161023	4099215	1.01508	4161023
25	205	190	1978802	1868208	1.05916	1978802
26	173	167	1882818	1822068	1.03335	1882818
27	96	91	1036161	979398	1.05797	1036161
28	65	62	737933	672041	1.09805	737933
29	75	68	785290	710313	1.10555	785290
30	68	59	810046	696953	1.16227	810046
31	404	386	5269275	5084284	1.03638	5269275
32	483	466	6707313	6505132	1.03108	6707313
33	619	607	8449245	8324040	1.01504	8449245
34	706	685	10003877	9764556	1.02451	10003877
35	480	478	6950101	6878839	1.01181	6950101
36	608	599	8777963	8641988	1.01573	8777963
37	750	740	10480140	10399766	1.00773	10480140
38	784	772	11296379	11201411	1.00848	11296379
39	362	343	5186839	4975773	1.04242	5186839
40	179	164	2464880	2337496	1.05450	2464880
41	586	561	8777013	8554685	1.02599	8777013
42	280	270	4218357	4106441	1.02725	4218357
43	397	384	5895235	5692333	1.03564	5895235
44	216	209	3298868	3238416	1.01743	3298868
45	456	446	6783126	6640187	1.02153	6783126
46	250	243	3712107	3626506	1.02362	3712107
47	143	141	1362392	1346007	1.01217	1362392
48	212	210	2005945	1967998	1.01929	2005945
49	101	94	956230	889870	1.07457	956230
50	141	138	1453432	1408265	1.03207	1453432
51	56	56	593486	593486	1.00000	593486
52	95	92	999753	957988	1.04360	999753
53	58	58	698664	698664	1.00000	698664
54	74	72	775610	751429	1.03191	775610
55	180	171	1882708	1771155	1.06301	1882708
56	163	159	1513403	1448486	1.04482	1513403
57	132	130	1368487	1354117	1.01061	1368487
58	84	83	807336	795082	1.01541	807336
59	61	59	663781	606668	1.09414	663781
60	60	59	670125	664262	1.00883	670125
61	34	31	481233	402706	1.19500	481233
62	31	29	356944	339367	1.05179	356944
63	178	176	2401187	2277586	1.05427	2401187
64	428	417	5623753	5502526	1.02203	5623753
65	130	121	1850277	1743376	1.06132	1850277
66	362	347	5210109	5086821	1.02424	5210109
67	61	53	897882	750243	1.19679	897882
68	173	165	2352511	2246332	1.04727	2352511
69	71	69	1009221	989714	1.01971	1009221
70	578	544	7645811	7325414	1.04374	7645811
71	587	577	8275557	8158532	1.01432	8275557
72	449	422	6506953	6160343	1.05626	6506953
73	393	379	5584365	5457563	1.02323	5584365
74	187	178	2763880	2674927	1.03325	2763880
75	221	214	3268358	3186101	1.02582	3268358
76	119	98	1623305	1435745	1.13064	1623305
77	108	95	1550122	1431342	1.08299	1550122
78	77	75	647835	634204	1.02149	647835
79	202	200	1956363	1895968	1.00534	1956363
80	42	40	400246	387166	1.03378	400246
81	86	84	796789	786765	1.01274	796789
82	332	326	3321622	3258816	1.01927	3321622
83	380	376	3905000	3838654	1.01728	3905000
84	152	148	1523618	1480496	1.02913	1523618
85	147	143	1614139	1551377	1.03379	1614139
86	72	69	793288	766785	1.03456	793288
87	62	57	658731	616242	1.06895	658731
TOTAL	23451	22532	304359876	294139618		304359876

Table 10. Nonresponse Adjustments for Weight Set W12

Key to Column Headings:

A. Weighting Class

B. Total Number of Students

C. Number of Respondents

D. Sum of Unadjusted Weights for All Students

E. Sum of Unadjusted Weights for Respondents

F. Adjustment Factor

G. Sum of Adjusted Weights